

LISTING OF THE CLAIMS

Please replace all previous claims with the following claims:

1. (Previously Presented) A method for allocating a plurality of encryption keys differentiated according to a plurality of access authorization classes, the differentiated encryption keys provided to communicate data with corresponding access points, the method comprising:

requesting by a wireless station to an access point to perform initial authentication; and obtaining by the wireless station the differentiated encryption keys in advance when the initial authentication of the wireless station is performed.

2. (Previously Presented) The method of claim 1, wherein the access authorization classes comprise:

a class 1 that indicates access authorization to an access point to which the wireless station is assigned,

a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,

a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and

a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

3. (Previously Presented) The method of claim 1, further comprising:

the wireless station desiring to communicate with an access point selecting from the differentiated encryption keys an encryption key corresponding to access authorization to the access point and communicates data with the access point.

4. (Previously Presented) The method of claim 1, wherein the obtaining of the differentiated encryption keys comprises:

- (a) determining access authorization to the access point when the access point is requested to perform initial authentication by the wireless station;
- (b) obtaining an encryption key and generating a shared key set including the obtained encryption keys in accordance with the determination result of step (a);
- (c) determining access authorization to an access point belonging to a LAN by a LAN authentication server which is requested to perform initial authentication by the wireless station;
- (d) obtaining an encryption key and updating the shared key set by adding the encryption key to the shared key set in accordance with the determination result of step (c);
- (e) determining access authorization to an access point belonging to a WAN by a WAN authentication server which is requested to perform initial authentication by the wireless station; and
- (f) obtaining an encryption key and updating the shared key set by adding the encryption key to the shared key set in accordance with the determination result of step (e).

5. (Previously Presented) The method of claim 4, wherein step (a) further comprises the wireless station requesting the access point to perform authentication, and the access point which is requested to perform authentication determining whether or not access authorization to the access point corresponds to a class 1, the class 1 indicating access authorization to the access point to which the wireless station is assigned.

6. (Previously Presented) The method of claim 4, wherein step (c) further comprises:

- (c1) the LAN authentication server determining whether or not access authorization to the access point corresponds to a class 2, the class 2 indicating access authorization to predetermined access points included in a LAN to which the wireless station is assigned;
- (c2) if a determination result of step (c1) indicates that the access authorization corresponds to the class 2, obtaining an encryption key of class 2, and determining whether or

not the access authorization corresponds to a class 3, the class3 indicating access authorization to all access points included in the LAN to which the wireless station is assigned; and

(c3) if a determination result of step (c2) indicates that the access authorization corresponds to the class 3, obtaining an encryption key of class 3.

7. (Previously Presented) The method of claim 6, wherein step (c2) further comprises:
allocating a null encryption key if the determination result of step (c1) indicates that the access authorization does not correspond to the class 2; and
allocating a null encryption key if the determination result of step (c2) indicates that the access authorization does not correspond to the class 3.

8. (Previously Presented) A roaming method for a wireless station using a plurality of encryption keys differentiated according to a plurality of access authorization classes, the differentiated encryption keys provided to communicate data with corresponding access points, the method comprising:

- (a) obtaining by a wireless station in advance an encryption key set including the differentiated encryption keys for the corresponding access points when initial authentication of the wireless station is performed;
- (b) receiving a command to communicate with an access point not available for communication using an encryption key currently selected in the encryption key set;
- (c) determining an access authorization to the access point not available for communications;
- (d) selecting an encryption key from the encryption key set obtained in advance corresponding to the determined access authorization; and
- (e) using the selected encryption key to encrypt data and communicate with the access point not available for communication.

9. (Previously Presented) The method of claim 8, wherein the access authorization classes comprise:

- a class 1 that indicates access authorization to an access point to which the wireless station is assigned,
- a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,
- a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and
- a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

10. (Previously Presented) A computer readable storage medium having embodied thereon a program of instructions executable by a computer for performing the method of claim 4.

11. (Previously Presented) A computer readable storage medium having embodied thereon a program of instructions executable by a computer for the method of claim 8.

12. (Previously Presented) An apparatus for allocating a plurality of encryption keys differentiated according to a plurality of access authorization classes, the differentiated encryption keys provided to communicate data with corresponding access points, the apparatus comprising:

- an access authorization determining unit for determining an access authorization class for communication between a wireless station and an access point;
- an encryption key storing unit which stores the differentiated encryption keys; and
- an encryption key allocation unit which reads an encryption key from the encryption key storing unit corresponding to a determination result of the access authorization determining unit and transfers a value of the encryption key to the wireless station.

13. (Previously Presented) The apparatus of claim 12, wherein the access authorization classes comprise:

- a class 1 that indicates access authorization to an access point to which the wireless station is assigned,
- a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,
- a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and
- a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

14. (Previously Presented) A computer readable storage medium storing instructions which, when executed causes execution of a program implementing a structure of a wireless data packet in a wireless network that comprises a wireless station and an access point, the structure comprising:

- a header of said data packet transmitted through the wireless network;
- an access authorization information storing field, which indicates access authorization for communication between the wireless station and the access point, wherein:
 - the access authorization information storing field comprises access authorization information being used for allocating encryption keys differentiated according to access authorization classes, and
 - the differentiated encryption keys are provided to communicate data with corresponding access points;
- an encrypted data field in which data contents to be transmitted are encrypted and stored; and
- an error correction field, which is used to correct data error.

15. (Previously Presented) The computer readable storage medium of claim 14, wherein the access authorization information storing field comprises two bits and through possible combinations of the two bits, stores

a class 1 that indicates access authorization to an access point to which the wireless station is assigned,

a class 2 that indicates access authorization to predetermined access points included in a local area network (LAN) to which the wireless station is assigned,

a class 3 that indicates access authorization to all access points included in the LAN to which the wireless station is assigned, and

a class 4 that indicates access authorization to multiple access points included in a wide area network (WAN).

16. (New) The method of claim 1, wherein access authorization is allocated to each of a plurality of areas in a wireless network, each of the areas being classified according to mobile characteristics of the wireless station including a roaming or a hand-off operation and is used for the wireless station to access an access point which exists in the classified area.

17. (New) The method of claim 8, wherein access authorization is allocated to each of a plurality of areas in a wireless network, each of the areas being classified according to mobile characteristics of the wireless station including a roaming or a hand-off operation and is used for the wireless station to access an access point which exists in the classified area.

18. (New) The apparatus of claim 12, wherein access authorization is allocated to each of a plurality of areas in a wireless network, each of the areas being classified according to mobile characteristics of the wireless station including a roaming or a hand-off operation and is used for the wireless station to access an access point which exists in the classified area.

19. (New) The computer readable storage medium of claim 14, wherein access authorization is allocated to each of a plurality of areas in a wireless network, each of the areas being classified according to mobile characteristics of the wireless station including a roaming or a hand-off operation and is used for the wireless station to access an access point which exists in the classified area.